UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte ERIC JACQUINOT, PASCAL LETOURNEAU, and MAURICE RIVOIRE

Appeal No. 2006-1360
Application No. 09/427,675

HEARD: JUNE 6, 2006

Before KIMLIN, JEFFREY T. SMITH, and FRANKLIN, **Administrative Patent Judges**.

FRANKLIN, **Administrative Patent Judge**.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 17 through 40. Claim 17 is representative of the subject matter on appeal, and is set forth below:

17. A process for mechanical chemical polishing in the integrated circuits industry, comprising

rubbing a layer with a support impregnated with an abrasive composition, wherein

said layer is (1) a material selected from the group consisting of silicon oxide, silicon nitride, and a polymer having a low dielectric constant, or (2) one layer of silicon oxide and another layer of silicon nitride, and

said abrasive composition comprises an aqueous acid suspension of

(i) individualized colloidal silica particles not linked to each other by siloxane bonds,

together with (ii) a surfactant, and

wherein said abrasive liquid composition is at a pH of 1-5.

The examiner relies upon the following references as evidence of unpatentability:

Grover et al. (Grover)	5,759,917	Jun. 2, 1998
Jacquinot et al. (Jacquinot)	6,043,159	Mar. 28, 2000

Claims 17 through 40 stand rejected under 35 U.S.C. § 103 as being obvious over Jacquinot and Grover.

OPINION

I. THE 35 U.S.C. § 103 REJECTION OF CLAIMS 17 THROUGH 40 AS BEING OBVIOUS OVER JACQUINOT IN VIEW OF GROVER

We refer to the examiner's position regarding this rejection as set forth on pages 2 through 4 of the answer. We add that we agree with the examiner's conclusion that because the polishing pad of Jacquinot is soaked with an abrasive composition during polishing, the abrasive liquid composition would get into the abrasive pad because, and this is not disputed by appellants.

The examiner recognizes that Jacquinot does not describe having a surfactant in the abrasive composition. The examiner relies upon Grover for teaching a method of polishing an oxide layer using a surfactant in an abrasive composition, and refers to column 6, lines 38 through 48 of Grover. Answer, page 2.

The examiner concludes that it would have been obvious in light of Grover to add a surfactant because Grover teaches that a surfactant is used to improve the within-wafer-nonuniformity of the wafer, thereby improving the surface of the wafer and reducing wafer defects. The examiner refers to column 6, lines 45 through 48 of Grover. Answer, page 3.

Beginning on page 7 of the brief, appellants argue that there is no reasonable suggestion in the prior art to modify Jacquinot by adding a surfactant to the slurry of Jacquinot. Brief, pages 7 through 8.

At the bottom of page 8 of the brief, appellants also argue that Jacquinot is directed to a method of chemical mechanical polishing using an acid aqueous suspension of colloidal silica containing individualized colloidal silica particles not linked together by siloxane bonds, and water as the suspension medium. Appellants also argue that Jacquinot is directed to the chemical mechanical polishing specifically of silicon dioxide layers, and makes no mention of polishing silicon nitride. Brief, page 9.

At the top of page 10 of the brief, appellants then argue that Grover teaches a chemical mechanical polishing having a unique chemistry that is especially suitable for chemical mechanical planarization where a high silicon dioxide removal rate and a low silicon nitride removal rate are required on the same substrate. Appellants argue that it is the unique chemistry of Grover that achieves the objective of Grover of a greater than five to one oxide to nitride selectivity. Brief, page 10. Appellants argue that to accomplish the objectives of Grover, Grover teaches a method for using a chemical mechanical polishing composition comprising carboxylic acid, a salt, and a soluble cerium silicon compound in an aqueous solution having a pH above 3. Brief, page 10. On page 11 of the Brief, appellants state that in Grover, the unique chemistry clearly is the composition of carboxylic acid and a soluble silicon compound that provide the selective polishing capability.

Appellants acknowledge that Grover teaches the use of surfactants at column 6, lines 37 through 64, from among a variety of optional additives. Appellants state that Grover teaches that the function of the optional surfactant is (1) improve stability of the polishing slurry, i.e., against settling, flocculation and decomposition of the oxidizing agent, and refers to column 6, lines 37 through 39 of Grover, or (2) improve stabilization of the slurry, and refers to column 6, lines 49 through 54 of Grover, or (2) improve the within-wafer-nonuniformity (WIMNU) of the wafers. Brief, pages 11-12. Appellants argue that not one of the 34 specific examples of Grover shows the use of a surfactant in the slurry.

On page 2 of the reply brief, appellants emphasize that Grover teaches that it is the unique chemistry which provides improved selectivity in Grover. Appellants argue that contrary to the examiner's argument in the middle paragraph on page 3 of the examiner's answer, Grover

does not teach any relationship between the presence of a surfactant and improved selectivity. Appellants refer to Dr. Jacquinot's §1.132 Declaration (which is also discussed in the brief on pages 20-21, e.g.) in support of this point.[1]

In view of the above, it is self-evident that the composition of Jacquinot is very different from the composition of Grover. The examiner has not addressed these differences in connection with his stated motivation to combine the references. That is, the examiner has not explained, that, in spite of these differences, the surfactant used in Grover (used to improve the within-wafer- nonuniformity of the wafers) would be also useful to improve the within-wafer-nonuniformity of the wafers in the Jacquinot composition. It is the examiner's burden to do so, and he has not.

In view of the above, we therefore reverse the rejection.

II. CONCLUSION

The 35 U.S.C. § 103 rejection of claims 17 through 40 as being obvious over Jacquinot in view of Grover is reversed.

[1] On pages 20-21 of the brief, appellants state that the Declaration shows that use of a surfactant is

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

REVERSED

EDWARD C. KIMLIN
Administrative Patent Judge

JEFFREY T. SMITH
Administrative Patent Judge

BEVERLY A. FRANKLIN
Administrative Patent Judge

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BAF:hh

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